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ABSTRACT

This paper presents data and discusses: (1) the procedures used in the preparation and delivery of eight computer-produced bibliographies, (2) the benefits of using them, (3) the costs in dollars, librarians, and time, (4) the possible operational problems, (5) suggested improvements, (6) additional uses, and (7) questions concerning service continuation. The data collection instruments were questionnaires, interviews, and "operational procedures recording forms." The main long term benefit was positive library experience. Short term benefits included: (1) time saved in locating references, and (2) a place to begin for students searching a new topic. (Author/DAG)

COMPUTER-PRODUCED BIBLIOGRAPHIES FOR CLASS USE

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ABSTRACT

This paper provides data on and discusses the preparation and delivery of eight computer-produced bibliographies for the use of entire classes of undergraduate students. The following are described and discussed: (1) the procedures followed in the preparation and delivery of each bibliography; (2) the benefits which are attributed to the use of the computer-produced bibliographies; (3) the costs in terms of dollars; (4) the costs in librarians' and clerical time; (5) the problems which have been or may be encountered in the operation of this service; (6) any suggested improvements in procedures; (7) additional uses; and (8) answers to questions regarding the continuation of this service.

The data collection instrument consisted of a student questionnaire, a faculty interview, a reference librarian interview, and a library manager interview. Cost and time data for all phases of the search process were collected on the "operational procedures recording form".

There were many variations in the preparation and in the use of the bibliographies. The cost and time figures for the seven searches varied greatly.

Three types of benefits were described: (1) long term benefits for students; (2) short term benefits for students; and (3) improvement in the quality of instruction. The main long term benefit is that the service provides the student with a positive library experience. Short term benefits include: (1) time saved in locating references allows more time for students to concentrate on reading and analyzing pertinent literature; and (2) a bibliography gives the students some place to begin when searching a new topic. The service also makes it possible for the professor to more easily update lectures with extensions of major concepts, and it may provide instructors with a more effective method of meeting course objectives.

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TABLE OF CONTENTS

LIST OF TABLES

PURPOSE

The purpose of this paper is to present and discuss the data collected on the "pilot project to provide classes with computer-produced bibliographies" which is described in "Background of the Pilot Project to Provide Classes with Computer-Produced Bibliographies". The paper is descriptive and exploratory in nature. There has been no attempt to produce statistically rigorous data.

The following will be described and discussed:

(1) the procedures followed in the preparation and delivery of each bibliography;

(2) the benefits which are attributed to the use of the computer-produced bibliographies by certain faculty members and their classes during the Spring Quarter, 1976;

(3) the costs in terms of dollars;

(4) the costs in librarians' and clerical time;

(5) the problems which have been or may be encountered in the operation of this service;

(6) some suggested improvements in procedures;

(7) additional uses; and

(8) answers to questions regarding the continuation of this service.

BACKGROUND OF THE PILOT PROJECT TO PROVIDE CLASSES WITH COMPUTER PRODUCED BIBLIOGRAPHIES

In recent years, many academic libraries have started to offer computer-produced bibliographic searches to their clients. Reluctantly, most of these libraries have had to institute charges for these services. While professors and researchers will probably be able to afford these services, it is unlikely that individual students will have the necessary dollars to take advantage of these costly services. While working as a student representative to the UCLA Academic Senate Library Committee, Mr. Jeffrey Griffith proposed "a rationale and a plan for using online bibliographic retrieval services to provide bibliographies tailored to the information needs of entire classes of students."[1] This idea grew out of a broader concern that the university administration and the library had to augment the instructional program of the campus. Some subsidized funding for student use of automated bibliographic services was being contemplated. It was proposed that it would make good economic sense to prepare these bibliographic searches for the use of an entire class. In other words, on a cost per student basis the service would be more cost effective than if computer searches were made available on an individual basis only. As a result of Mr. Griffith's proposal, which was endorsed by the Academic Senate Library

[1]"On Line Bibliographic Retrieval: An Instructional Resource for Classes," ED 121 242 (University of California, Los Angeles, March 22, 1976), p. 1.

Committee, the University Library received funding from UCLA Vice-Chancellor John C. Ries' "Innovative Teaching Fund" to carry out stage one of a proposed two stage pilot project.

The funding for stage one of the pilot project totaled $2500 and was to be divided among ten undergraduate classes--$250 per class. The funding was to cover all costs incurred in the preparation of the class bibliography with the exception of professional staff time.

The original concept went far beyond simply producing a bibliography for student use. It called for the following steps to be carried out in the preparation of a class bibliography.

(1) After consultation with the instructor and possibly with the students, the reference librarian would formulate a search strategy and do a search on one or more bibliographic data bases.

(2) On receiving the offline printout the librarian would eliminate the obviously non-relevant citations.

(3) The professor would review the output and check off references judged suitable for inclusion in the final bibliography.

(4) The library would add call numbers and locations to the selected references, which in some cases included books and technical reports in addition to journal articles.

(5) The citations would be cut and pasted so that the final product would include only the citations selected by the

instructor. Photocopies of the bibliography were to be made for each student.

Specific procedures to be followed in preparation of the bibliography were to be determined by the reference librarian in consultation with the instructor.

By March 31, 1976, the first day of the Spring Quarter, five library managers, whose libraries were, or would in the near future, be offering computer-produced bibliographic searches, had committed themselves to recruit two professors each who were willing to participate in this project. The five libraries were the Biomedical Library, the Education and Psychology Library, the University Research Library Reference Department, the Public Affairs Service, and the Physical Sciences and Technology Library. It was left up to each library to recruit prospective professors as they saw fit. It was requested that each professor be told that he/she would be asked to participate in an evaluation of the pilot project at the end of the Spring Quarter, 1976. See Table 1 for a list of the participating libraries, classes, the data bases searched, and the subject of each search.

Unfortunately, the Physical Science and Technology Library was unable to participate in the project. The Public Affairs Service participated in only one search during the Spring Quarter, 1976. One of the searches which the Education and Psychology Library participated in was used for two classes. (class numbers four and five on Table 1).

Table 1

Participating Libraries, Classes, Subject of Search, and Data Bases(s) Searched

Library	Class	Subject of Search	Data Base Searched
Education and Psychology Library	Physiological Psychology Lab	"Rats and self-stimulation", "Rats and specific drugs"	Psychological Abstracts
University Research Library Reference Dept.	Presidential Nomination Politics	"Role of organized labor in national politics and in state primaries"	New York Times Information Bank
Public Affairs Service	Advanced Demography	"Population growth policy"	Congressional Information Service, American Statistics Index
Education and Psychology Library	Problems in Instructional Research	"Cognition and creativity in education"	Psychological Abstracts
Education and Psychology Library	Cognition and Creativity in Education	"Cognition and creativity in education"	Psychological Abstracts
Biomedical Library	Plant Population Ecology	"Pollination of flowering plants"	BA Previews
Biomedical Library	Seminar in Genetics	"Ethical issues in genetics"	Medline
University Research Library Reference Dept.	Political Theory and the Psychologists	"Psychological conflict and ethical standards"	Psychological Abstracts

DESIGN OF THE EVALUATION INSTRUMENT

The evaluation instrument is to consist of:

(1) a student questionnaire;

(2) a faculty interview;

(3) a reference librarian interview;

(4) a library manager interview;

(5) an operational procedures recording form.

Since the student is to be the end user of the bibliography it is important to have feedback on:

(1) benefits derived from the use of the bibliography included: (a) use of the bibliography; (b) savings in time; (c) usefulness for their purposes; (d) value of the librarian's discussion (if applicable); and (e) changes in library habits resulting from participation in this project;

(2) price students would consider reasonable if they were asked to share the costs of the bibliography;

(3) continued use of an updated version of the bibliography in the course;

(4) means of access to the bibliography;

(5) use of other reference tools;

(6) manner in which bibliography was used;

(7) any improvements students might suggest;

(8) suggestions for other classes that might benefit from the use of a computer-produced bibliography.

Feedback from professors will include:

(1) judgments of the value of the bibliography for students and for faculty, and the factors to which this value or lack of value is attributable;

(2) continuation of this service;

(3) suggested funding mechanisms;

(4) manner in which bibliography was utilized in teaching;

(5) types of special processing given the bibliographies;

(6) any improvements they might suggest;

(7) necessary lead time;

(8) other ways computer-produced bibliographies might be used for classes;

(9) for what kinds of classes would computer-produced bibliographies be most useful.

Feedback from the reference librarians (librarians who performed the online search will include):

(1) ways in which they think this service can help students;

(2) role of this service in relation to the instruction of undergraduates in library use;

(3) possible cutbacks in ongoing reference activity to allow more time to conduct searches for classes;

(4) role of this service in relation to their role as a reference librarian;

(5) procedures followed in preparation and delivery of the bibliographies including: (a) criteria for selection of the class; (b) did the reference librarian meet with the class; (c) topic of discussion during the meeting, if applicable; (d) any problems students might have had; (e) any other means of communication with the class; (f) individual attention to students;

(6) for what kinds of classes would computer-produced bibliographies be most useful;

(7) approximate length of a search for an individual client;

(8) in what ways a search for a group differs from a search for an individual client.

Feedback from library managers will include:

(1) the most important aspect of this service;

(2) the ranking of searches for classes in relation to other new services which the library manager would like to undertake;

(3) possible cutbacks in ongoing reference activity to allow more time to conduct searches for classes;

(4) professors' reactions when they were invited to participate in this project;

(5) any noticeable impact on other library services which could be attributed to this service;

(6) problems encountered;

(7) number of searches the library manager's library could handle per quarter.

The "operational procedures recording form" was used to collect times spent by librarians and clerical staff on various aspects of the bibliography preparation and delivery. See Appendix 1.

METHODOLOGY

The questions to be asked on the student questionnaires and in the faculty, reference librarian, and library manager interviews were developed by this author in conjunction with Peter Watson, Data Services Coordinator for the UCLA Library, and with the reference librarians and the library managers who participated in this project. Griffith had suggested a list of questions to be included on the student questionnaire and in the professor interviews--some of these questions were used in either the original or a modified form. The questionnaire and interview questions which finally evolved are shown in

Appendices 2, 3, 4, and 5. The "operational procedures recording form" was suggested by Griffith and modified by the author.

The author requested each participating reference librarian to ask the professor to have the students fill out the questionnaires during class time. Presumably if this procedure had been followed the return rate for the questionnaire would have approached 100 percent. Unfortunately, in many cases, the questionnaire was only distributed during this time.

The author set up appointments for the evaluation interview with each professor, reference librarian, and library manager involved in the pilot project. In order to insure as much consistency in data collection as possible, each individual (professor, librarian, etc.) was asked the same set of questions. Although it was desirable to cover the same ground with each person, it was equally important to obtain pertinent comments which would not have been elicited by the interview questions. To this end an informal interview arrangement enabled the author to ask follow up questions when a point was not clear. Also, before the first question was asked, the interviewee was asked to give their general impression of the project. Further the interviewee was encouraged to make any comments he/she thought would be important to the interviewer.

Fifteen of the sixteen interviews were recorded. This was necessary to permit the interviewer to concentrate on conducting the interview rather than on taking notes. Later the taped interviews were transcribed, and the analysis is based

on the transcriptions of the interviews. Closely related topics and ideas were discussed at different points of the interview.

See Table 2 for the total number of participants and the number of respondents in each of the four groups. Table 3 shows the total number of students in each class and the total number of questionnaires returned by the class.

Table 2

Number of Participants and Number of Respondents in Each of the Four Groups

Group	Total Number of Persons in Group (N)	Total Number of Respondents in Group (n)	Response Rate (percentage)
(1) Student	100	58	58%
(2) Faculty	7	6	85.7%
(3) Reference Librarians	6	6	100%
(4) Library Managers	4	4	100%

Table 3

Number of Questionnaires Returned by Class

Class[1]	Number of Students Enrolled in Class	Number of Questionnaires Returned
(1) Physiological Psychology Lab	12	6
(2) Presidential Nomination Politics	12	12
(3) Advanced Demography	8	6
(4) Problems in Instructional Research	9	5
(5) Cognition and Creativity in Education	20	5
(6) Plant Population Ecology	7	7
(7) Seminar in Genetics	20	17
(8) Political Theory and the Psychologists	12	0[2]
TOTALS	100	58

[1]Classes are presented in the same order as in Table 1.

[2]Questionnaires for this class disappeared in transit.

Presentation of Results

The results are presented in tabular form in the following eight sections:

(1) procedures followed in preparation and delivery of each bibliography including use;

(2) benefits attributed to the use of the bibliographies;

(3) direct costs calculated in dollars;

(4) costs in terms of librarians' and clerical time;

(5) problems which have been or may be encountered in the operation of this service;

(6) suggested improvements in procedures;

(7) additional uses;

(8) questions concerning the continuation of the service.

The questions analyzed in each of the eight sections are shown in Table 4. Following each of the eight result sections is a summary and then a discussion of the results presented in the tables which make up the section.

The following abbreviations are used to indicate to whom a question was directed:

(1) "S" indicates a student question;

(2) "F" indicates a faculty or professor question;

(3) "RL" indicates a reference librarian question;

(4) "LM" indicates a library manager question.

Table 4

Questions as They Relate to the Topics for Presentation and Discussion

Topic	Student Questions (Appendix 2)	Faculty Questions (Appendix 3)	Reference Librarian Questions (Appendix 4)	Library Managers' Questions (Appendix 5)	Operational Procedures Recording Form
(1) Procedures followed in preparation and delivery of each bibliography.	S1[1] How did you have access to the bibliography? S3 How did you use the bibliography?	F1 How was the bibliography used? F5 Special processing?	RL1 Criteria for selection of class. RL2 Did searcher meet with the class? RL3 What was discussed at the meeting? RL4 Did students have any problems? RL5 Other communication with class? RL6 Individual attention?		

[1] S1 -- question number 1 on the student questionnaire
F1 -- question number 1 on the faculty interview

Table 4 (cont'd)

Topic	Student Questions (Appendix 2)	Faculty Questions (Appendix 3)	Reference Librarian Questions (Appendix 4)	Library Managers' Questions (Appendix 5)	Operational Procedures Recording Form
(2) Benefits attributed to the use of the bibliographies.	S5 Did you locate and read any items on the bibliography? How many? S6 Do you think that having the bibliography saved you time? How much time? S7 In general, was the bibliography useful for your purposes? Comment. S11 If the computer search was discussed with your class by a librarian, was the discussion valuable? How? S12 Has your participation in this project altered the way in which you use the library? How?	F2 On a scale of 1 to 7 (with 1 being not useful and 7 being most useful), how would you rate the value of this bibliography for students? To what factors is this attributable? F3 On the same scale as above, how would you rate the value of this bibliography for yourself in preparing for students? To what factors is this attributable?	RL8 In what ways do you think this service can help students, if any? RL9 How do you see this service in relation to instruction of undergraduates in library use?	LM1 What do you consider to be the most important aspect of this service?	

Table 4 (cont'd)

Topic	Student Questions (Appendix 2)	Faculty Questions (Appendix 3)	Reference Librarian Questions (Appendix 4)	Library Managers' Questions (Appendix 5)	Operational Procedures Recording Form
(3) Costs in terms of dollars.					Costs are reported in column 4 (charges incurred).
(4) Costs in terms of librarians' and clerical time.					"Task", "Completed by", and "Time spent" columns.
(5) Problems which have been or may be encountered in the operation of this service.	S4 Did you use other reference tools? Which ones?	F10 Appropriate funding mechanisms?	RL7 How does a search for a group differ from a search for an individual client?	LM3 Professors' reactions when invited to participate? LM2 Impact on other library services? LM4 Problems encountered so far? LM5 How many searches next quarter?	

Table 4 (cont'd)

Topic	Student Questions (Appendix 2)	Faculty Questions (Appendix 3)	Reference Librarian Questions (Appendix 4)	Library Managers' Questions (Appendix 5)	Operational Procedures Recording Form
(6) Suggested improvements in procedures.	S13 Are there any improvements that you would suggest in this service as you received it? Please comment.	F4 What suggestions would you make for improving this bibliographic service? F8 In order to integrate this into your teaching when would the bibliography have to be ready?			
(7) Additional uses.	S10 Other class that could use computer-produced bibliographies?	F6 Otherways for using computer-produced bibliographies for classes? F7 Types of classes?	RL12 Types of classes?		
(8) Questions concerning the continuation of the service.	S9 Should class continue to use updated bibliography? S8 Would you pay and what is reasonable price?	F9 Should service be continued?	RL11 Cut back on any reference activity to allow more time for this service? RL10 Relation of this service to reference librarian role?	LM7 Cut back on any reference activity to allow more time for this service? LM6 Assuming additional funding--new services and rating of searches for classes?	

Table 5A

Procedures Followed in Preparation and Delivery of each Bibliography Including Use (by class)

Questions	Physiological Psychology Lab	Presidential Nomination Politics	Advanced Demography	Problems in Instructional Research	Cognition and Creativity in Education	Plant Population Ecology	Seminar in Genetics	Political Theory and the Psychologists
RL1 Criteria for selection of class.	Professor had previously used computer searches for classes.	Suitability of course content.	Suitability of course content.	Suitability of course content.	Suitability of course content.	Suitability of course content.	Suitability of course content.	Suitability of course content.
RL2 Did searcher meet with class?	No	Yes, students received instructions at library.	No	No	No	Yes, students received instruction at library.	Yes, students received instruction at library.	Yes, students received instruction at library and classroom.
RL3 What was discussed at meeting?		Demonstration computer and library search techniques.				Library search techniques.	Computer search and printout.	Computer search and search techniques.
RL4 Did students have any problems?		None				None	Serial title abbreviations.	Needed additional sources.
RL5 Other communication with class?	Cover letter.					Cover letter sample citation.	Cover letter sample citation.	Notes suggesting other sources.
RL6 Individual attention?		Helped some students with additional sources.				Some students came in to thank reference librarian.	Some students came in to thank reference librarian.	Helped some students with additional sources.
S1 Access to bibliography?	Reserve and professors copy.	Individual search.	Individual copy.	Reserve and professors copy.	Reserve and professors copy.	Individual copy.	Reserve.	Individual search
F1 How was bibliography used?	Provide access to literature pre- and post-experiment.	References for paper.	Oral report on whether bibliography would have been useful.*	(1) choosing topic for paper (2) references (3) update professor on aspect of broad topic.	(1) references for oral report (2) professor used to prepare lectures.	(1) references for oral report (2) references for review of literature.	(1) choosing topic for paper (2) references.	References.
F5 Special processing.	Author index.	Microform locations added.	(1) Professor excluded non-relevant citations. (2) cut and paste (3) call numbers added.			(1) Professor indicated articles of central and peripheral interest non-relevant items excluded. (2) cut and paste (3) an * indicated that items were owned by UCLA.		Call numbers added.

*Class received bibliography after papers were completed.

Table 5B

Procedures Followed in Preparation and Delivery of Each Bibliography Including Use

Question	Respondents	Total Giving Response[1]	Response
S3 How did you use the bibliography?	51[2]	42	References for term paper.
		13	References for oral presentation.
		8	Ideas.
		2	Didn't use.
		1	Misunderstood the question.

[1]Some students used the bibliography in more than one way.

[2]Although 58 questionnaires were returned only 51 students gave responses to this question.

SUMMARY: PROCEDURES FOLLOWED IN THE PREPARATION AND DELIVERY OF THE BIBLIOGRAPHIES INCLUDING THE USE TO WHICH EACH BIBLIOGRAPHY WAS PUT

RL1[1]: Most (7 out of 8) of the classes were selected because the course content coincided with coverage of one or more data bases. One class was chosen because the professor had utilized computer-produced bibliographies for his classes before.

RL2: In 4 out of the 8 classes, the reference librarian met with the class at the library or in the classroom.

RL3: One or all of the following took place at the meeting between the reference librarian and the class: (1) demonstration of an online computer search; (2) discussion of the computer-produced bibliography and the search strategy used in producing it; and/or (3) discussion of library search techniques.

RL4: During the discussions with the students 2 of the 4 reference librarians noticed that students needed help with understanding the serial title abbreviations in the bibliography or with identifying additional reference sources.

RL5: Instead of, or in addition to, meeting with the class, some reference librarians wrote explanations of (1) the way the bibliography was produced, (2) the organization of the bibliography, and/or (3) the citations contained in the bibliography. The explanations were attached to the front of the bibliographies.

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[1]Refers to questions on the interviews or questionnaires, e.g., RL1 = reference librarian questionnaire, question number 1.

RL6: In at least two of the classes, individual students came to the reference librarian and asked for help locating additional types of reference materials.

S1: Students had access to the bibliographies in one or a combination of the following ways: (1) on reserve in a library; (2) professor's copy; (3) individual copy of a class bibliography; and/or (4) for those who actually had a search tailored specifically to their needs--a copy of their individual search.

F1, S3: The bibliographies were used in a wide variety of ways including: (1) to provide references for a paper, oral report, or review of the literature; (2) to help students choose a topic for a paper; (3) to provide access to the literature prior to and after a class experiment; (4) to update professor on specific aspect of a broad topic; and (5) to help professor prepare lectures.

F5: Examples of the types of special processing which some of the bibliographies received include: (1) compilation of an author index; (2) addition of call numbers of journals and/or books at UCLA; (3) addition of microform locations; and (4) removal of non-relevant citations and inclusion of only relevant citations in the bibliography.

DISCUSSION: PROCEDURES FOLLOWED IN THE PREPARATION AND DELIVERY OF THE BIBLIOGRAPHIES INCLUDING THE USE TO WHICH EACH BIBLIOGRAPHY WAS PUT

It is clear that there are many variations in the way in which these bibliographies were process and delivered. It is equally clear that no determination of the most effective (greatest benefits for least costs) manner of processing and delivery has been attempted. Further, there has been no attempt to differentiate between the benefits derived from the bibliography itself and those derived from the delivery (discussion of bibliography and/or additional sources by a reference librarian) of the bibliography.

For future study and in order to determine to which aspects of the service the indicated benefits can be attributed, controlled experiments such as the following could be set up. To determine the importance of discussion by the reference librarian, a class could be divided into thirds. One-third of the students would receive the bibliography and would attend a discussion by a reference librarian; one-third of the studnets would receive the bibliography and would not attend a discussion by a reference librarian; and one-third would not receive a bibliography but would attend a discussion by a reference librarian. All students would have the same assignment. The completed assignments would be graded by the professor without his knowing to which group each student belonged.

Table 6A

Benefits Attributed to the Use of the Bibliographies (Students)

Questions	Number of Respondents (R's)	Yes R's	%	No R's	%	$\bar{Y}$	SD	Range
S5 (a) Did you locate and read any items in the bibliography? (b) How many? ($\bar{Y}$)	57	48	84.2%	9	15.8%	8.10 items	7.50	1 to 38 items
S6 (a) Do you think that having the bibliography saved you time? (b) How much time? ($\bar{Y}$)	50	45	90.0%	5	10.0%	6.11[1] hours	4.94	1 to 20 hours

[1] For the purposes of calculating $\bar{Y}$, SD, and range for question S6 n = 18. The reason for this is that 60% of the "yes" responses were not statistically usable, i.e., 10 students didn't specify time, 17 students gave non-numerical responses like many hours, several hours, days, etc.

Table 6B

Benefits Attributed to the
Use of the Bibliographies (Students)

Questions	Number of Respondents (R's)	Yes R's	%	No R's	%
S7 (a) In general, was the bibliography useful for your purposes? (b) Please comment.[1]	53	48	90.6%	5	9.4%
S11 If the computer search was discussed with your class by a librarian, was the discussion valuable?	29	29	100.0%	0	0.0%
S12 (a) Has your participation in this project altered the way in which you use the library? (b) How?	56	21	37.5%	35	62.5%

[1]See Table 6C for narrative comments.

Table 6C

Benefits Attributed to the Use of the Bibliographies (Students)[1]

Question	Number of Responses	Respresentative Comment
		Comments received under yes.
S7 (a) In general, was the bibliography useful for your purposes? (b) Please comment.	11	(1) The bibliography saved time.
	8	(2) The bibliography was generally helpful or useful.
	5	(3) They would have missed references without the bibliography.
	3	(4) The bibliography helped put their topic in perspective.
	2	(5) They were able to do other research because they had the bibliography.
	2	(6) It was convenient to have all the references in one place.
	22	(7) No comment.
		Comments received under no.
	3	(1) The bibliography did not contain citations relevant to my topic of interest.
	1	(2) No, but I think it will be.
	1	(3) No comment.
		Comments received under yes.
S12 (a) has your participation in this project altered the way in which you use the library? (b) How?	9	(1) Increased awareness of resources.
	5	(2) Increased efficiency in library use.
	4	(3) Change in information seeking habits.
	3	(4) No comment.
		Comments received under no.
	35	(1) No comment.

[1]Comments received in response to questions 7 and 12. Actual comments not given. Comments have been classified into categories.

Table 7

Benefits attributed to the Use of the Bibliographies (Faculty)

Question	$\bar{Y}$	SD	Range	Number[1]	Factors Ratings were Attributed to:
F2 (a) on a scale of 1 to 7 (with 1 being not useful and 7 being most useful), how would you rate the value of this bibliography for students? ($\bar{Y}$) (b) to what factors is this attributable?	6.5	.71	5.5 to 7.0	5	(1) The time saved in locating references made it possible for students to concentrate on reading pertinent literature or doing actual research.
				2	(2) Provided students without ideas for paper topics some place to focus.
				1	(3) The bibliography contained references which would have been virtually impossible to find through students' normal search procedures.
				1	(4) The comprehensive bibliography helped in defining potential areas for new research.
				1	(5) This is a better way to get students into the literature than other methods.
F3 (a) on a scale of 1 to 7 with 1 being not useful and 7 being most useful), how would you rate the value of the bibliography for yourself in preparing for students? ($\bar{Y}$) (b) to what factors is this attributable?	6.67	2.21	1.0 to 7.0	4	(1) It may help achieve course objectives more effectively than previous methods.
				3	(2) Enables the professor to augment lectures and extend major concepts with more recent and more relevant information. Because of the number of man hours required, many professors find it impossible to keep up with the literature in several areas.
				1	(3) Collects all pertinent references in one place.
				1	(4) Because the professor could more easily bring himself up to date on a topic, he could give more effective guidance to each student in developing a research proposal.

[1] Number of faculty members giving response.

Table 8

Benefits Attributed to the
Use of the Bibliographies (Reference Librarians)

Questions	Number[1]	Responses
RL8 In what ways do you think this service can help students, if any?	4	(1) Students will be able to spend more time actually using the material.
	2	(2) Students have a much less frustrating encounter with the library when there is a bibliography with call numbers available.
	2	(3) If the project includes a visit with the librarian, it would be a great help to students in learning how to use the library.
	1	(4) Because the librarian is involved with the class he/she should be able to anticipate problems which the students might have.
	1	(5) A bibliography can provide students with background on a broad subject.
	1	(6) It can help students focus on a specific topic within a broader field.
RL9 How do you see this service in relation to instruction of undergraduates in library use?	2	(1) The bibliography could serve as the first step in introducing a student to the library.
	1	(2) A positive step to get out and show the student that the library wants to help them--quite a different approach from making them come through the door and approach the reference desk.
	1	(3) This service may facilitate the facultys' encouragement of students to use the library.
	1	(4) The project provided the librarian with an opportunity to try and help students who don't always have the background they need to use the library.
	1	(5) The project is primarily concerned with helping the student with an assignment for a class. It is secondarily concerned with teaching the student how to use the library.

[1]Number of reference librarians giving responses

Table 9

Benefits Attributed to the Use
of the Bibliographies (Library Managers)

Question	Number[1]	Responses
LM1 What do you consider to be the most important aspect of this service?	4	(1) This was an excellent way to introduce students and faculty to the concept of computer searching.
	1	(2) Each student benefited tremendously because they all got a library tour tailored toward what they were doing in the class. The discussion with the librarian covered reference tools, services, and search techniques.
	1	(3) This project has brought to library-faculty and library-student relationships a new positive dimension--increased library involvement with the instructional program.
	1	(4) The public relations value was great.

[1]Number of library managers giving responses

SUMMARY: BENEFITS ATTRIBUTED TO THE USE OF THE BIBLIOGRAPHIES (STUDENTS)

S5: 84.2 percent of the student respondents located and read an average of 8.1 items from the bibliography. The range was from 1 to 38 items read.

S6: 90.0 percent of the student respondents said that the bibliography saved them an average of 6.11 hours. Estimates of time saved ran from 1 to 20 hours.

S7: 90.6 percent of the student respondents said that the bibliography was useful for their purposes. The most often cited comment was that the bibliography had saved time (nine students).

S11: 100 percent of the students who attended a discussion by a librarian said that the discussion was valuable.

S12: 37.5 percent of the student respondents said that their participation in this project has altered the way in which they use the library. The most common change in library habits given was an increased awareness of resources (nine students).

SUMMARY: BENEFITS ATTRIBUTED TO THE USE OF THE BIBLIOGRAPHIES (FACULTY)

F2: Professors rated the value of the bibliography for students at an average of 6.5 on a scale with a low of 1 and a high of 7. The range of answers was from 5.5 to 7.0. All six respondents agreed that the bibliography was helpful to students. The most often (5 out of 6) cited benefit was that the time

saved in locating references made it possible for students to concentrate on reading pertinent literature, performing actual research, or consulting further reference tools.

F3: Professors rated the value of the bibliography for themselves in preparing for students at an average of 5.67 on a scale from 1 to 7. The range of answers was from 1 to 7. Five out of six respondents agreed that the bibliography was useful for professors. The most commonly cited benefit (4 out of 5) was that the bibliography might help achieve course objectives more effectively than previous methods. The second most cited benefit was that the bibliography enables the professor to augment lectures and extend major concepts with more recent and more relevant information. Because of the number of man hours required, many professors find it impossible to keep up with the literature in several areas.

SUMMARY: BENEFITS ATTRIBUTED TO THE USE OF THE BIBLIOGRAPHIES (REFERENCE LIBRARIANS)

RL8: All six reference librarians agreed that the service could help students. The most common benefit seen was that the students would be able to spend more time actually using the material (four reference librarians).

RL9: All six reference librarians saw the service in a positive manner in terms of instruction of undergraduates in library use. The most often given answer was that the bibliography could serve as the first stop in introducing a student to the library (two reference librarians).

SUMMARY: BENEFITS ATTRIBUTED TO THE USE OF THE BIBLIOGRAPHIES (LIBRARY MANAGERS)

LM1: All four library managers agreed that the most important aspect of this service was that it was an excellent way to introduce students and faculty to the concept of computer searching.

DISCUSSION: BENEFITS ATTRIBUTED TO THE USE OF THE BIBLIOGRAPHIES

When we talk about benefits we are really trying to determine if this service improves the quality of instruction or the education which students receive. If we consider the service in these terms, we see that yes it has a great deal to contribute in the way of improving instruction. The ways in which this service can improve the quality of the student's educational experience can be divided into three categories: (1) long term benefits; (2) short term benefits; and (3) the quality of education as it is delivered by the instructor.

Long term benefits. From the broadest standpoint, the main long term benefit is that the service provides the student with a positive experience with the library. The following factors contribute to this positive experience:

(1) This service shows students that the library wants to help them. It is not always apparent to the student that the purpose of the library is to help them with their information needs. This type of outreach approach should help to counteract some of the negative impressions many students have developed in regard to using the library.

(2) This service shows students that the service can help them. The service is primarily concerned with helping the student with a specific assignment. It is secondarily concerned with teaching the student how to use the library.

(3) This service: (a) enables the student to bypass a certain amount of bibliographic drudgery; and (b) allows the librarian to work closely with the class, and to anticipate problems that the class may encounter.

(4) If the reference librarian discusses the bibliography and/or further library sources, the student will learn of other specific sources and, in general, develop an increased awareness of resources and an increased efficiency in library use.

Short term benefits. The project is primarily concerned with helping the student with a specific assignment. It does this in the following ways.

(1) It gives the students some place to begin. It can provide background on a broad subject. It can help students to focus on a specific topic within a broad field.

(2) The time saved in locating references allows more time for students to concentrate on reading and analyzing the pertinent literature or doing research or in consulting other reference tools.

(3) The bibliography may contain references which would have been difficult or impossible to locate through students' normal search procedures.

The quality of education as it is delivered by the instructor. The service can help the professor improve his quality of instruction in the following ways.

(1) It makes it easier and less time-consuming to update lectures with the latest information.

(2) The professor is able to better advise the student concerning the relevant and current literature in a broad subject area.

(3) The service may provide instructors with a more effective method of meeting course objectives. For example, it may be a better way of getting students to read current literature.

Table 10

Task Cost by Search[1]
(in dollars)

	1	2	3	4	5	6	7	Task Total	Mean Cost Per Task
SEARCH COSTS									
Online time	$ 36.73	$168.75	$147.71	$ 33.50	$ 49.40	$ 35.00	$144.20	$ 615.29	$ 87.90
Offline printouts	72.10		27.25	66.70	66.00			232.05	58.01
Service fee	10.00	10.00	10.00	10.00	10.00		10.00	60.00	10.00
TOTAL	118.83	178.75	184.96	110.20	125.40	35.00	154.20	907.34	129.62
Photocopying	67.20		16.68	15.75	28.70	28.40		156.73	31.35
Clerical Labor[2]	63.58	4.08	44.54	1.35	27.20	17.34	40.80	198.89	28.41
TOTAL Production Costs (excluding professional librarian costs)	249.61	182.83	246.18	127.30	181.30	80.74	195.00	1262.96	180.42
Professional Labor[3]	42.77	49.67	78.04	21.30	57.94	56.91	52.65	359.28	51.33
TOTAL Production Costs (including professional librarian costs)	$292.38	$232.50	$324.22	$148.60	$239.24	$137.65	$247.65	$1622.24	$231.79

[1]The bibliography resulting from search number 4 was used for both class 4 and class 5.

[2]Clerical labor was figured at $4.08/hour (Librarian Assistant II rate) direct labor costs.

[3]Professional librarian labor was figured at $8.52/hour (Associate Librarian IV) direct labor costs.

SUMMARY: COSTS

The average cost for the production of the computer-produced bibliographies (including clerical costs and excluding professional librarian costs) is $180.42. The costs varied from $127.30 to $249.61. If the librarian costs are included the average cost goes up to $231.79, and the range becomes $137.65 to $324.22.

Online costs ranged from $33.50 to $147.71 and averaged $87.90.

Costs for offline printouts ranged from $27.25 to $72.10 and averaged $58.01.

Total search costs (excluding labor) ranged from $35.00 to $184.96 and averaged $129.62.

Clerical labor costs ranged from $1.35 to $63.58 and averaged $28.41.

Professional labor costs ranged from $21.30 to $57.94 and averaged $51.33.

Photocopying costs ranged from $0.00 to $67.20 and averaged $31.35 (excluding the instances of no charges).

DISCUSSION: COSTS

It is clear that the production costs of a computer-produced bibliography can be easily kept within the $250 estimates. It is also clear that the total costs for the production of a computer-produced bibliography can vary greatly as can the component costs which figure in the total costs.

The production of these bibliographies should be thought of as a long-term investment and as in any long-term investment the costs should be spread over the years. The bibliography can be used by future classes. In this light, it can be said that the cost (including professional librarian costs) per student to date is $16.22. And by this time next year the cost per student will have been reduced by one-half.

In considering the $16.22 cost per student it should also be kept in mind that many of the classes involved in this pilot project were quite small and in this sense unrepresentative of undergraduate classes. If larger classes were chosen the cost per student would decrease proportionately as the number of students increases.

Table 11A

Reference Librarian Time Per Task by Search

	Task Time by Search							Task Total	Task Mean[1]
	1	2	3	4	5	6	7		
Initial contact with professor	10	75	20	20	10	35	20	190	27.14
Pre-search interview	60	50	60	30	60	20	90[3]	370	52.86
Search formulation	65	50	165	30	20	100	60	490	70.00
Online search	31	135	90	30	38	71	96	491	70.14
Examination of output (libn.)	20		30	20	15	45	30	160	26.67
Post-search discussion									
a. with professor	45	40	125	20	80	30		340	56.67
b. with class (including bibliographic lecture)					110	80[2]	15	205	68.33
Prepare cover letter and sample citation	60				40	10		110	36.67
Supervision of clerical tasks	10		60		35	10	60	175	35.00
SEARCH TOTAL	301	350	550	150	408	401	371	2531	

[1]Time in minutes.

[2]Two reference librarians spent 40 minutes each

[3]The class participated in the pre-search interview.

Table 11B

Clerical Time Per Task by Search

Task	Task Time by Search 1	2	3	4	5	6	7	Task Total	Task Mean[1]
Deliver output to professor	30*		30*		5*			65	21.67
Separate, collate and copy output	80*		70*	20*	150	200		520	104.00
Special processing (add call numbers, prepare author index, cut and paste)	720	60	525*		220		600	2125	425.00
Place bibliography or items on reserve	15		30*					45	22.50
Type cover letter or sample citation	90*				25	45		160	53.33
SEARCH TOTAL	935	60	655	20	400	245	600	2915	

[1]Time in minutes.

*Times reported with an asterisk were actually completed by a reference librarian but are classified as clerical tasks.

SUMMARY: TIME TABLE

Librarian Tasks

The amount of time invested in the pilot project on "professional tasks" ranged from a low of 2.5 hours to a high of 9.16 hours with an average of 5.93 hours. The tasks included in these time estimates are not the same for each bibliography, i.e., not every librarian composed a cover letter to be affixed to the bibliography.

The amount of time invested in the initial contact with the professor ranged from 10 to 75 minutes with an average of 27.14 minutes.

The amount of time invested in the pre-search interview varied from 20 to 90 minutes with an average of 52.86 minutes.

The amount of time invested in the search formulation varied from 20 to 165 minutes with an average of 70 minutes.

The amount of time invested in the online search varied from 30 to 135 minutes with an average of 70.14 minutes.

The amount of time invested in examination of the output by the librarian varied from 15 to 45 minutes with an average of 26.67 minutes.

The amount of time invested in post-search discussion of the bibliography with the professor by the librarian varied from 20 to 125 minutes with an average of 56.67 minutes.

The amount of time invested by the librarian in post-search discussion with the class varied from 15 to 110 minutes with an average of 68.33 minutes.

The amount of time invested in the preparation of a cover letter and/or sample citation varied from 10 to 60 minutes and averaged 36.67 minutes.

The amount of time invested in the supervision of clerical tasks ranged from 10 to 60 minutes with an average of 29 minutes.

Clerical Tasks

The amount of time invested in clerical processing tasks varied from .33 to 15.58 hours with an average of 6.94 hours.

The time invested in delivery of the output of the bibliography to the professor varied from 5 to 30 minutes with an average of 21.67 minutes.

The time invested in the separation, collation, and photocopying of the output varied from 20 to 200 minutes with an average of 104 minutes.

The time invested in the "preparation of the bibliography" (clerical tasks such as adding call numbers, cutting and pasting, etc.) varied from 60 to 720 minutes with an average of 471.25 minutes.

The time invested in the placement of the bibliographies on reserve varied from 15 to 30 minutes with an average of 22.5 minutes.

The time invested in the typing of the cover letter and/or the sample citation varied from 25 to 90 minutes with an average of 53.33 minutes.

DISCUSSION: TIME TABLE

The wide range in total librarian time spent on the search (2.5 - 9.6 hours) can be partially attributed to the different components which went into the delivery of the service. Another crucial reason for the time variations is the experience of the reference librarian with computer searching. Most of the reference librarians would be considered beginning searchers and as they gain expertise and confidence, they will probably spend less time in the tasks involved in the actual search process. Although the wide range in the time spent on the various component parts of the search is due in part to the inexperience of some of the reference librarians, even experienced searchers will complete parts of the search process with varying times. A more vivid example of these variations can be seen in a comparison between searches 5 and 6 (classes 6 and 7). Both these searches were completed by the same highly capable reference librarian. Many variables contribute to the difficulty of and consequently to the time involved in the completion of the search process. For example, a search may be quite simple--but if the user has difficulty expressing his information needs, the librarian will spend more time trying to understand what is being asked for--so the pre-search interview time will need to be lengthy.

The wide variations in clerical time can be attributed to the different types of processing given to the bibliographies. The issue of who is to be responsible for the clerical

processing is discussed in the section entitled "Discussion: Additional Aspects of Feasibility".

It is clear that the operation of this service on a broader basis will require a substantial commitment in terms of librarians' time. The time data for searches 5 and 6 provide the best basis for estimating costs in terms of time, approximately six hours of reference librarian time and from 4 to 7 hours of clerical time per bibliography.

It is useful to consider several trade-offs in discussing the amount of time involved in the production of a computer-produced bibliography for a class.

(1) One professor (class 1) estimated that the computer-produced bibliography saved him 18 hours of work. If one compares this 18 hours of professor's time to the 20.6 hours of library time (5.02 hours of librarian's time and 15.58 hours of clerical time) which it took to produce this bibliography, the amount of time involved takes on a different light.

(2) Some of the time which went into the production of the bibliography would have gone into helping individual students learn how to use basic reference tools and/or in a bibliographic lecture for the class.

It should also be pointed out that once the bibliography is completed it can be used over and over again for the same class. It is a simple and inexpensive matter to update the bibliography once a year.

Table 12A

Questions Concerning Possible Problems

Question	Number[1]	
LM3 Professors' reactions when invited to participate?	4	Immediate interest and curiosity.
F10 What sources of funds do you consider to be the most appropriate?	5	Departmental funds.
	3	Could be required and sold through bookstore.
	1	Academic support funds.
LM4 What problems have been encountered so far?	4	Amount of time invested in processing tasks.
	3	Amount of time invested in solicitation of classes.
	2	Coordination of frenetic schedules of professors and librarians.
	1	Lack of expertise and confidence on the part of the inexperienced searchers.
RL7 How does a search for a group differ from a search for an individual?	4	Broader in scope, larger retrieval.
	2	No difference.
LM5 How many searches next quarter?	2	Two searches.
	1	Two to five searches, assuming that they are treated as normal data services searches.
	1	Four searches

[1]Number of persons giving particular response.

Table 12B

Questions Concerning Possible Problems

Question	Total R's	No R's	%	Yes R's	%	No. Using	Reference Tool
S4 Did you use other reference tools? Which ones?	57	6	10.5%	51	89.5%	32	Card catalog.
						29	Indexes/ Abstracts
						11	Newspaper indexes.
						12	Other.

Table 12C

Questions Concerning Possible Problems

Question	Total R's	No R's	%	Yes R's	%
LM2 Impact on other library services?	44	4	100%	0	0.0%

SUMMARY: QUESTIONS CONCERNING POSSIBLE PROBLEMS

LM3: All four library managers found that most professors who were contacted were immediately interested and curious.

F10: Five out of six professors suggested that departmental funds would be an appropriate mechanism for funding. Three professors suggested that students could be required to purchase the bibliographies in lieu of or in addition to textbooks.

S4: 89.5 percent of student respondents used one or more other type(s) of reference tools in addition to the computer-produced bibliography.

LM2: There has been no discernable impact on other library services.

LM4: All four library managers cited the amount of time invested in processing tasks (annotating bibliographies with call numbers, cutting and pasting, etc.) as a problem. Three library managers found that the amount of time invested in the solicitation of professors had been a burden. Two library managers brought up the problem of the coordination of professors' and librarians' frenetic schedules.

RL7: Four of six reference librarians said that the search strategies for the bibliographies for classes were much broader than those for individual clients. Two reference librarians found that there was no difference.

LM5: Two library managers said their library could do two searches during the next quarter.

DISCUSSION: QUESTIONS CONCERNING POSSIBLE PROBLEMS

LM3: It is clear that some professors will be interested in participating in this project. It should be stressed that professors will need explanations and illustrations of what a computer search can and cannot do.

F10: The question of funding needs further investigation. In addition to thinking that departmental funding would be the most appropriate funding mechanism, some professors indicated that they would be willing to support this service in a budget request to their department chairperson.

S4: This question was asked with the idea that if most students had consulted reference tools in addition to the bibliography that the issue of spoon-feeding would be refuted. It is quite evident that students did not use the computer-produced bibliography exclusively.

LM2: Although as yet there has been no discernible impact on other library services there are several areas which probably would be effected if the service was offered on a broader basis. Reserve desks, inter-library loan services, and circulation statistics could expect to experience some impact. The development of measures of impact on other library services will be an important aspect in the determination of the true costs of this service.

LM4: It is interesting to note the probable reasons underlying the most often brought up problems of time invested in processing tasks and time spent contacting prospective

professors. Neither one of these tasks are traditionally considered part of the librarian's role. Most of the processing was or could have been done at the LAII (clerical) level and provisions for reimbursement had been set up so that the libraries would be "paid back" for LAII time. Presumably the reference librarian involved would have spent some time in supervising the LAII who carried out the clerical tasks.

We are still left with the question of why the time spent on clerical tasks became such an issue. Possibly librarians did not want the library to become permanently saddled with the special processing end of this operation. Or the librarians may have truly believed that the special processing would not increase the value of the bibliography. However, the question of the value of the special processing is still unresolved.

If it is decided to continue with the special processing, it will then need to be determined whose responsibility it should become. Should the library, the individual professor, or a special department assume responsibility for special processing?

Solicitation of classes for participation in this project involves marketing of the library--as one librarian put it--"selling ourselves". Libraries and librarians are traditionally passive. They expect users to flock to the library and consequently little effort is expended to aggressively seek users or to "advertise" library services. Marketing is traditionally associated with commercial sales and the "profit

motive", and many librarians' attitudes reflect the academicians' disdain for such mundane functions. In addition to the amount of time involved, the above reasons probably contributed to the importance attached to this problem.

Some librarians felt that the marketing of this service should have been the responsibility of the library administration.

RL7: It is not surprising to find that some of the search strategies for classes were broader than search strategies for searches for individuals. This must be considered in light of the problem of organization with several of the bibliographies with a broad scope. The bibliography may lose its usefulness as its breadth increases. The issues of optimal length and breadth of the scope of the bibliographies should be investigated and it should always be brought to a professor's attention during the discussion of the search topic. For more information about these issues see "Discussion: Suggested Improvements in the Procedures Followed in the Preparation and Delivery of the Bibliographies".

LM5: In light of the amount of time invested in these searches it is not surprising that no library manager would volunteer to have his/her library handle more than five searches for classes in a quarter. In answering this question, some library managers qualified their answers by saying that they did not want to be involved in the marketing of the service or in the special processing tasks. They wanted to again assume the passive stance. However, it is the writer's opinion that

this service must be actively promoted by the library. Few professors know what can be accomplished with computerized bibliographic data bases and they are not going to find out unless the library shows them. In other words, it is the library's responsibility to market the service to its potential users. Whether the marketing of a library service should be the library administration's responsibility or the individual library's responsibility should be decided on the basis of who can do the most effective job.

Table 13

Suggested Improvements in the Procedures Followed in the Preparation and Delivery of the Bibliographies

Question	Number Persons Responding	Response
S13 Are there any improvements that you would suggest in this service as you received it? Please comment. (Total respondents, 52)	26	No improvements needed.
		IMPROVEMENTS SUGGESTED WHICH COULD BE INCORPORATED INTO THIS SERVICE
	8	(1) improve the organization of the bibliography and/or include an explanation of the bibliography.
	4	(2) the bibliography should be edited.
	1	(3) handout with serial title abbreviations should accompany bibliography.
	1	(4) further reference sources should be indicated.
	1	(5) make printout more readable by underlining titles.
	1	(6) allow students to choose own terms.
	1	(7) allow students to see unedited search.
	1	(8) reference librarian at desk did not know how to use printout.
		IMPROVEMENTS SUGGESTED IN GENERAL LIBRARY PROCEDURES
	2	(1) improve ease of use of microfilm.
	1	(2) make availability of service known.
	1	(3) improve circulation procedures.
		SUGGESTED IMPROVEMENTS RELATED TO DATA BASE
	2	(1) make service less expensive.
	1	(2) improve indexing.
	1	(3) include more recent articles.
F4 What suggestions would you make for improving this bibliographic service? (Total respondents, 6)	4	(1) none.
	2	(2) start earlier.
	1	(3) organization of bibliography should be explained, and improved.
	1	(4) general search at beginning of class, then specific searches as students decide on topics for papers.
F8 In order to integrate this into your teaching how many months ahead would we have to start? (Total respondents, 6)	5	(1) bibliography should be ready on first day of class. Begin approximately one month ahead.
	1	(2) bibliography should be ready 8-9 weeks before the quarter begins.

SUMMARY: SUGGESTED IMPROVEMENTS IN THE PROCEDURES FOLLOWED IN THE PREPARATION AND DELIVERY OF THE BIBLIOGRAPHIES

S13: Twenty-six students suggested a number of improvements. The most often suggested improvement (eight students) was that the organization of the bibliography should be improved and/or explained. The second most often suggested improvement was that the bibliography should be edited.

F4: The most often suggested improvement by professors was that production of the bibliography should get started earlier. One professor said that the organization of the bibliography should be explained and/or improved.

F8: Five of the six professors said that the bibliography should be ready for distribution to students on the first day of class. One professor wanted to have the search 8 to 9 weeks before the beginning of class.

DISCUSSION: SUGGESTED IMPROVEMENTS IN THE PROCEDURES FOLLOWED IN THE PREPARATION AND DELIVERY OF THE BIBLIOGRAPHIES

It is suggested that the underlying reason why organization of the bibliography came to the forefront as a problem is that some of the bibliographies contained from 600-700 citations. These 600-700 citations were given to the students just as the computer printed them out--organized only by date of entry into the data base.

There are two discernible issues here: (1) number of citations included in a bibliography; and (2) the organization of the citations within the bibliography.

Several questions should be considered with regard to the number of citations included in a bibliography:

(1) Would organization be a problem with fewer citations?

(2) What is the optimal number of citations?

(3) What factors lead to a huge retrieval?

(4) What methods can be employed for limiting retrieval?

(5) What is the relationship between huge retrieval and offline printing costs?

Organization would probably become less of a problem as the number of citations decreased. And, the task of imposing some form of organization would become easier and less time-consuming as citations decreased. The main purpose of indexes and abstracts is to make citations easier to get at by assigning them to subject categories. It could be argued that giving students bibliographies consisting of several hundred unorganized and unedited citations is making bibliographic retrieval even more difficult than it normally is. On the other hand, some instructors may think that it is an important part of a student's education to learn to impose some order on chaos.

The usefulness of the bibliography for students will probably vary with the number of citations included in the bibliography and with the organization of the citations. It can be hypothesized that as the number of citations in the bibliography increases so must the degree of organization increase.

There are several factors which could lead to retrieval of a large number of citations:

(1) the topic as stated by the professor was very broad;

(2) the amount of publication in a narrow field is prolific;

(3) the reference librarian failed through inexperience to anticipate the large retrieval;

(4) the reference librarian told the professor that retrieval might be quite large but the professor insisted on a comprehensive retrieval.

There are many ways in which retrieval can be limited:

(1) by date of publication (i.e., 1975 and 1976 articles only);

(2) narrow search terms can be used;

(3) certain aspects of a broad topic can be excluded; and

(4) foreign publications can be excluded.

The size of retrieval is the single most important factor in the cost of the offline printout. As can be seen in Table 10 the offline printout costs can exceed the online computer time. There are various ways of charging for offline printouts ($0.25 per citation, $0.20 per page) and in most cases, offline printout charges increase with the number of citations printed.

The editing and the organization of the bibliography will be the key factors in the ease with which the

bibliography is used and in cases of very large retrieval, will probably determine the usefulness of the bibliography.

By editing I mean the selection of articles for inclusion in the bibliography. By organization is meant the way in which the citations are organized within the bibliography. Since the percentage of relevant citations retrieved in a computer search can vary from 0 to 100 percent, professors and students must be made aware of this fact if a bibliography is to remain in its unedited state.

Who should be responsible for the editing and organization of a bibliography?

The reference librarian is responsible for making the organization which he/she has imposed on the bibliography clear. Toward this end, a table of contents should be provided.

In some cases a table of contents to the bibliography will be sufficient--especially if the search strategy consisted of several search statements or modules each of which retrieved a small number of citations. In the event that one search statement retrieved a large number of citations it may be necessary for the professor or teaching assistant to impose some degree of organization on the citations.

One professor (class 6) edited and organized the bibliography in the following way: (1) irrelevant citations were excluded; and (2) citations were divided into "articles of central interest" and "articles of peripheral interest". In

order to give the class a feeling for what the articles in the bibliography contained--the professor spent an hour of class time telling something about each article--was it peripheral or central to the topic of the class, was it hypothetical, speculative, or did it contain hard-core data or was it a major review article. This professor was concerned that his students avoid spending alot of time looking at peripheral articles.

The amount of editing and organizing a bibliography receives should depend on the sophistication of the students, course objectives, length of bibliography, and the importance which the professor places on the inclusion of only relevant citations and the manner in which they are organized.

Table 14A

Uses

Question	Number Respondents	Response
F6 Other ways for using computer searches for classes?	2	Students could do own search.
F7 Types of classes?	5	(1) any class which requires a paper or oral report.
	1	(2) any class in which a considerable amount of reading in original journals is required.
RL12 Types of classes?	2	(1) any class with exception of those based on only textbooks and lectures.
	1	(2) small classes in which course content and data base are matched.
	1	(3) graduate and upper-division small classes.
	1	(4) classes with tightly defined focus.
	1	(5) seminars in which current information is important.
	1	(6) large undergraduate classes (a large bibliography could have several modules so students would have a broad choice of topic).

Table 14B

Uses

Question	R's	Yes R's	%	No R's	%	Note
S10 Other classes that could use computer-produced bibliographies?	51	34	66.7%	17	33.3%	22 different courses in 9 subject areas listed by 29 students.

SUMMARY: USES

F6: Professors could think of only one additional way in which searches for classes could be employed. Students could write their own search strategies and then run their own searches.

F7: When asked what types of classes computer-produced bibliographies would be most useful for professors answered in the very broad terms of "any class in which a paper or oral report is required or which requires a large amount of reading in the journal literature".

RL12: When reference librarians were asked for what types of classes computer-produced bibliographies would be most useful, two reference librarians thought that they would be useful for almost any class with the exception of those based on only textbooks and lectures. Other responses given by reference librarians were much narrower in terms of specific types of classes.

S10: 66.7 percent of student respondents could think of other classes that could use computer-produced bibliographies. Twenty-nine students listed a total of 22 different courses in nine subject areas.

DISCUSSION: USES

The suggestion that students could write their own search strategies and run their own searches is excellent. There is no doubt that this would provide a highly valuable learning experience for students. However, it would probably require an even greater amount of the librarian's time. This possibility should be explored.

In considering professors' and librarians' responses to "for what types of classes would computer-produced bibliographies be useful" one notices that professors give the broadest possible answers while reference librarians tend to give answers in terms of specific types of classes. Each reference librarian is probably answering the question in relation to the problems he/she encountered in one or two specific searches. The professor is probably unaware of the problems which the librarian may have encountered. The type of class is yet another variable to be considered in terms of the benefits and the costs of this service.

Table 15A

Questions Concerning Continuation of Service

Question	Total R's	Positive R's	%	Negative R's	%
F9 Should service be continued?	6	6	100%	0	0.0%
S9 Should class continue to use updated bibliography?	57	52	91.2%	5	8.8%

Table 15B

Questions Concerning Continuation of Service

Question	Total R's	Positive R's	%	Negative R's	%	$\bar{Y}$[1]	SD	Range
S8 (a) would you pay? (b) what would be a reasonable price?	45	34	75.6%	11	24.4%	$4.14	$2.59	$0.20 to $10.00

[1]For students who would pay.

Table 15C

Questions Concerning Continuation of Service

Question	Total R's	Positive R's	%	Negative R's	%
RL11 Cut back on any reference activity to allow more time. .?	6	1	16.7%	5	83.3%
LM7 Cut back on any reference activity to allow more time . .?	4	0	0.0%	4	100.0%

Table 15D

Questions Concerning Continuation of Service

Question	Total R's	Number	Response
RL10 Relation of this service to reference librarian role?	6	6	Logical extension of reference service.

Table 15E

Questions Concerning Continuation of Service

Question	Total R's	Services Listed
LM6 Assuming additional funding--new services and rating of searches for classes in relation to the new services?	4	(1) more in-depth reference. (2) extend reference hours. (3) conduct one to four hour seminars for graduate students. (4) give orientations for undergraduates. (5) formalized program to orient Research and Teaching Assistants. (6) deepen and enrich reference collection. (7) work more closely with departments. (8) develop AV kits for reference tools.

Data services in general and computer-produced bibliographies for classes specifically were rated in the lower one-half of the services listed above.

SUMMARY: QUESTIONS CONCERNING CONTINUATION OF SERVICE

F9: 100 percent of the professors agreed that the service should be continued.

S9: 91.2 percent of student respondents thought that the class should continue to use an updated bibliography.

S8: 75.6 percent of student respondents said that they would pay an average of $4.14 for the bibliography. The range was from $0.20 to $10.00.

RL10: 100 percent of the reference librarians saw this service as a locial extension of reference service.

RL11: 83.3 percent of the reference librarians said that they would not consider cutting back on any ongoing reference activity to allow more time for this new service.

LM7: 100 percent of the library managers said that they would not consider cutting back on any ongoing reference activity to allow more time for this new service.

LM6: When asked to list new services that they would want to undertake if they received additional funding, library managers listed several services most of which were extensions of already existing services. When asked to rank computer-produced bibliographies for classes in relation to the other services listed, they were rated in the lower half.

DISCUSSION: QUESTIONS CONCERNING THE CONTINUATION OF SERVICE

On the one hand we have an enthusiastic response to the service by its prospective users. On the other hand, we have what seems to be a negative response on the part of the groups who are the prospective providers of the service. Many reasons can be offered to explain these seemingly cool responses.

(1) Librarians in some reference departments feel that their reference departments have reduced the services they offer to a bare minimum. For this reason, these same librarians feel that the services which they do offer are so basic that there can be no possibility of cutting back on them. And considering this prevailing attitude, it is not surprising that when library managers were asked what new services they would

like to undertake if new funds were allocated for reference activities that most of the services named were improvements or expansions of services already offered. This new service seems to be viewed as frosting on a cake which does not have any sugar in it.

(2) The reference staff of each library is of a fixed size and each person has certain responsibilities within the reference department. Because of these fixed responsibilities it is difficult to decide who would have responsibility for the new service.

(3) Any reconsideration of priorities is time-consuming and can be painful. It is difficult to admit that there may be new and perhaps more effective ways of offering library service. This new service represents a complete departure from the traditionally passive role of the library in instruction within the university. Whenever change is contemplated there is a potential threat to the persons involved.

(4) It is likely that many librarians find it difficult to see beyond the piles of work which participation in the development and implementation of this pilot project has created. None of the libraries involved received any compensation (in terms of professional staffing) for participation in this pilot project. The reference librarian had to neglect other responsibilities to make time for working on the pilot project.

(5) Some librarians are not convinced that this service is worth pursuing. They may feel that the traditional methods of library service are more effective.

(6) There seemed to be a prevailing fear among librarians that if this pilot project succeeded, the library administration would ask the libraries to offer this service on a much broader basis without adequate provision for additional staffing. It is not surprising that new demands would be looked upon as a hardship unless new funds accompany the new demands.

(7) Some reference librarians had frustrating experiences for several reasons: (a) lack of experience and consequent lack of confidence in their ability to perform adequately; (b) guilt over neglect of normal responsibilities; (c) time pressures because the bibliographies had to be completed quickly in order to be of use to students.

(8) Many librarians felt that the library administration should have assumed the responsibility for recruiting the participating classes. It was generally agreed that the library should not be put in the position of having to sell itself. And if selling was necessary it should not be the task of the individual libraries but rather an administrative responsibility.

CONCLUSION

It is clear that this service is highly beneficial for both students and faculty. The costs incurred in the production of the computer-produced bibliography can be held within $250. The additional costs in terms of librarians' time is high. A sizable commitment in librarian time will be necessary

if this service is to be offered to a significant number of classes each quarter. Consequently, either a reexamination of library priorities and a reallocation of library staff responsibilities, or new staffing may be called for.

As a result of this study many areas for further study have been identified. Some of the most important issues for further investigation are:

(1) What is the relationship between the use of the bibliography, the discussion of the bibliography by a reference librarian, and the discussion of library reference tools by a reference librarian, in maximizing the benefits experienced by the students? Should all three be included in the delivery of the service? Could the service be provided in the same manner as a search for an individual client and still be effective?

(2) Most of the classes used in the pilot project are not really representative of undergraduate classes. A more rigorously controlled study should be carried out and classes should be chosen to represent major types of undergraduate classes.

(3) Measures of impact on other library services (reserves, inter-library loan service, circulation, etc.) need to be developed.

(4) What part does the special processing play in making the bibliographies effective as teaching tools?

(5) Long-term benefits can only be guessed at. Attempts could be made to measure long-term benefits.

(6) It may be found that classes in certain subject areas can benefit more than others by using this type of bibliography. Life sciences data bases are at a more advanced stage of development than social sciences data bases.

(7) What is the optimal length for the computer-produced bibliography and to what degree must the bibliography be organized to be useful to undergraduate students?

In conclusion, this type of service gives faculty members an opportunity to make use of the library in general and the reference librarians specifically as an instructional resource. Conversely, this type of service gives librarians a chance to become more directly involved in the instructional process.

APPENDIX 1

Appendix 1

Operational Procedures Recording Form

Instructor_____ Search Title_____

Task	Completed By (print name)	Time Spent (nearest 5 minutes)	Charges Incurred (e.g., search, printing, photocopying)	Problems Encountered	Comments (e.g., action taken, suggested solution)

APPENDIX 2

Appendix 2

University of California Los Angeles

University Library
and
Graduate School of Library and Information Science

Dear Student:

This has been an experimental project conducted by the Library to investigate the use of computer-produced bibliographies for classes. To help us evaluate the program, please fill out the attached questionnaire and return it to your professor. If you would like to discuss any aspect of the project further, please call me at 392-5524 or leave a message at the Graduate School of Library and Information Science, Room 120, Powell Library, Campus.

Thank you very much for your help.

Carol R. Nelson
Graduate Student
GSLIS

* * * * * * *

QUESTIONNAIRE FOR STUDENTS

1. How was the bibliography made available for your use?
   ( ) On reserve
   ( ) Own copy
   ( ) Shared copy
   ( ) Other, please specify _____

2. Was this adequate?
   ( ) Yes
   ( ) No
   If no, what was the primary reason for this?_____

3. How did you use this bibliography? (E.g., to get references for term paper, to get ideas for a topic for your paper, etc.)

4. Did you consult other reference tools beyond this bibliography?
( ) Yes
( ) No
If yes, please check off reference tools consulted:
( ) Card Catalog
( ) Indexes or abstracts
( ) Newspaper indexes
( ) Other, please specify_____

5. Did you locate and read any items in this bibliography?
( ) Yes
( ) No
If yes, approximately how many items did you locate and read?_____items

6. Do you think that having the bibliography saved you time?
( ) Yes
( ) No
If yes, how much time do you think it saved?_____hours

7. In general, was the bibliography useful for your purposes?
( ) Yes
( ) No
Please comment.

8. If students were asked to purchase the bibliography rather than receiving it for free, what would you judge to be a reasonable price?

9. Do you think this course should continue to use an updated version of this bibliography?
( ) Yes
( ) No.

10. Are there other classes you have had that you think could have made use of computer searches?
( ) Yes
( ) No
If yes, please list classes and/or instructors:

11. Was the computer search discussed with you or your class by a librarian?
( ) Yes
( ) No
If yes, please comment on whether this was valuable or not:

12. Has your participation in this project altered the way in which you use the library?
( ) Yes
( ) No
If yes, how?

13. Are there any improvements that you would suggest in this service as you received it?
( ) Yes
( ) No
Please comment:

Thank you again. Your help is appreciated.

APPENDIX 3

Appendix 3

Interview Questions for Professors

1. How did you use this bibliography in your teaching?

2. On a scale from 1 to 7 (with 1 being not useful and 7 being most useful), how would you rate the value of this bibliography for students? To what factors is this attributable?

3. On a scale from 1 to 7 (with 1 being not useful and 7 being most useful), how would you rate the value of the bibliography for yourself in preparing for classes? To what factors is this attributable?

4. What suggestions would you make for improving this bibliographic service?

5. What type of special processing did the bibliography receive? Was this special processing worth the effort?

6. In what other ways could you see employing computer-produced bibliographies for classes?

7. For what kinds of classes do you think computer-produced bibliographies would be useful?

8. In order to integrate this into your teaching, how many months ahead would we have to start?

9. Would you like to see the library continue this service?

10. If so, when soft money is no longer available for this project what sources of funds do you consider to be the most appropriate?

APPENDIX 4

Appendix 4

Interview Questions for Reference Librarians

1. On what criteria did you base your selection of classes for participation in this project?

2. Did the professor schedule time for you to come to the class or for the students to come to the library? IF YES, ASK QUESTIONS 3 and 4. IF NO, SKIP TO 5.

3. What did you talk about when you met with the class?

4. Did the students need help with anything in particular?

5. Did you communicate with the class in any other way? (cover letter, etc.)

6. Did any students receive individual attention?

7. How did the fact that the project search was for a group rather than an individual affect the search?

8. In what ways do you think this service can help students, if any?

9. How do you see this service in relation to instruction of undergraduates in library use?

10. How do you see this service in relation to your role as a reference librarian?

11. If you were in a position to make a decision--would you consider cutting back on any ongoing reference activity to allow more time for this new service?

12. What kinds of classes do you think computer-produced bibliographies would be useful for?

APPENDIX 5

Appendix 5

Interview Questions for Library Managers

1. What do you consider to be the most important aspect of this service?

2. Has there been any noticeable impact on other library services as a result of this service?

3. How did professors react when invited to participate in this experimental project?

4. What problems have been encountered so far?

5. If funding for this project continued to cover the cost of the search and its processing but not librarian's time, approximately how many searches a quarter would your unit be able to handle?

6. Assuming your library was to receive additional funds for reference services, what new services would you want to undertake? What priority would you assign this new service in relation to these other new services?

7. Would you consider cutting back on any ongoing reference services to allow more time for this new service?